

Cost Estimate - Antenna Pedestal

STATINTL

$$\text{concrete} = [15' \times 3.5' \times 2.25'] 2 = 236.25 \text{ ft}^3$$

reinforcing steel :

$$\begin{aligned} L_1 &= 4(11 \times (3.5 - .5)) = 132 \text{ ft.} \\ L_2 &= 4(3 \times (15 - .5)) = \frac{174}{306} \text{ ft.} \end{aligned}$$

$$\text{weight/ft} = \pi R^2 L = \pi \left(\frac{7/8}{2}\right)^2 \times .28356 = 2.046 \#$$

$$\text{weight} = 306 \times 2.046 = 626.1 \#$$

ASB 10" x 4 5/8" x 25.4#/ft

$$\text{weight} = 13 \times 9 \times 25.4 = 2971.8 \#$$

ASB 5" x 3" x 14.75#/ft

$$\text{weight} = 14.75 [(13 \times 3) + 4.5(5)] = 907.1 \#$$

angle 6" x 3 1/2" x 9.8#/ft

$$\text{weight} = 9.8 \times 2 [20.5 + 19] = 774.2 \#$$

column base plates = 12 [1.5 x 16 x 16 x .28356] = 217.8 #

columns 10" x 10" x 60.95#/ft

$$\begin{aligned} L_1 &= 11'-3" \times 3 = \} 63.75 \text{ ft} \\ L_2 &= 10 \times 3 = \} \end{aligned}$$

$$\text{weight} = 60.95 \times 63.75 = 3885.6 \#$$

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3/8" steel plate

$$L = 13' + 5" + 5" = 13.83'$$

$$A = L^2 = [13.83 \times 12]^2 = 27556 \text{ in}^2$$

$$\text{wght} = [27556 \times \frac{3}{8} \times .28356] = 2930.2 \#$$

grating

$$\text{Area} = [3 \times 20.5 \times 2] + [3 \times 13] + [4.5 \times 13] = 220.5 \text{ ft}^2$$

Border grating size 8 style B = 11.6#/ft²

$$\text{wght} = 11.6 \times 220.5 = 2557.8 \#$$

~~Line strength~~ bolts

$$\text{wght} = \pi \left(\frac{1.5}{2}\right)^2 12 \div (48)(.28356) = 288.6 \#$$

excavation $2.25 \times 3.5 \times 15 \times 2 = 236.25 \text{ ft}^3$ for footings

excavation for crushed stone

$$1 \times 3.5 \times 15 \times 2 = 105 \text{ ft}^3$$

$$\text{crushed stone} = 105 \text{ ft}^3$$

excavation

by hand with pick & shovel in heavy soil
 labor only = $\$27/\text{c.y.}$ $= \frac{236.25 + 105}{27} \times 27 =$ $\$341.25$

tamping with vibrating plate $\frac{236.25 + 105}{27} \times 1.50 =$
 $12.64 \times 1.50 = \$18.96$

trim sides and bottom

for concrete pour in handpan $\$.76/\text{ft}^2$

$$A = [(15 \times 3.5) + (2.25 \times 15 \times 2) + (3.5 \times 2.25 \times 2)] 2$$

$$A = 271.5$$

$$\text{cost} = 271.5 \times .76 = \$206.34$$

hauling 6 c.y. dump truck 4 mi round trip =

$$\$2.85/\text{c.y.} \times 12.64 = \$36.02$$

total =

add 300% mobilization, contingencies, size of job

$$\$602.57$$

$$\$1807.71$$

general contractor O&P = 30%

$$\frac{\$723.08}{\$3133.36}$$

excavation = $\$3150.00$

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Reinforced concrete footings

formwork spread footings 1 use

$$= 15 \times 3.5' \times 2 \times \$2.50 = \$262.50$$

reinforcing in place heavy base = \$550/ton

$$\text{cost} = \frac{\$550}{2000\#} \times 626.1\# = \$172.18$$

$$\text{concrete } \frac{\$135}{\text{c.y.}} \times \frac{236.25}{27} = \$1181.25$$

anchor bolts (use 1 1/2"φ × 18" long @ \$18 ea)

$$\text{cost} = 48 \text{ bolts} \times \$18 = \$864$$

total = \$2479.93

add 50% for mobilization, size of job +
contingencies \$1239.97

$$30\% \text{ general contractor O+P} = \underline{\$1115.97}$$

$$\$4835.87$$

concrete footings = \$4850.00

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Structural Steel

Welded rigid frame 1 story minimum \$880/ton

wight =	$10'' \times 4\frac{5}{8}''$ beam =	2971.8
	5" x 3" beam =	907.1
	6" x 3½" L	774.2
base plates		217.8
columns		3885.6
3/8" plate		2930.2
grating		<u>2557.8</u>
		14244.5

$$\text{add } 15\% \text{ for welds + connections} = \frac{2136.68}{16381.2\#}$$

$$\text{cost of steel} = \frac{16381.2}{2000} \times 880 = \$7207.73$$

add 60% formalization, contingencies,
size of job #4324.64

add 30% for O+P for general contractor # 3459.71

14992.08

structural steel = #15000

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Cost Summary (excluding ladder & railing)

1) concrete footings	\$ 4850 ✓
2) excavation	\$ 3150 ✓
3) structural steel	<u>\$ 15000</u>
	\$ 23,000. <u>00</u>

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Additions to original estimate

excavation for stair foundations:

$$\frac{1.5 \times 2.5 \times 4.5 \times 2}{27} = 1.25 \text{ C.Y. negligible}$$

concrete negligible

steel 2 channels $20' \times 15\#/\text{ft} \times 2 = 600\#$

columns 2 WF shapes. $16\#/\text{ft} \times 2 \times 12 = 384\#$

misc $15\% \underline{148}$

$\underline{1132\#}$

Cost = ~~1030.00~~ $\frac{1132}{2000} \times 880 = \underline{\$500}$

60% contingency = $\underline{\$300}$

30% O&P = $\frac{\$240}{\$1040}$

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Painting

structural steel 1 field coat = $\$.19 / \text{SF}$

we are requiring 1 shop coat } $4 \times .19 = .76 \text{ SF}$
 3 field coats }

$$A_1 = 19 \times 18.83 = 348.3 \text{ ft}^2$$

$$A_2 = 348.3$$

$$A_3 = 2' \times (19 \times 2 + 18.83 \times 2) = 151.32 \times 8 = 1210.6$$

$$A_4 = .83 \times 12 \times 24 = \underline{240}$$

$$2147.2$$

$$\text{cost} = 2147.2 \times .76 = \underline{\underline{1632}}$$

100 600% for contingencies etc

$$30\% \text{ O&P} = \underline{\underline{4243}}$$

Stair removal

5 men working 1 day @ $\$ 30 / \text{hr}$

$$5 \times 8 \times 30 = \$ 1200$$

$$100 600\% \text{ contingency} = \underline{\underline{1200}}$$

$$30\% \text{ O&P} = \underline{\underline{720}}$$

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Summary

concrete footings	\$ 4850
excavation	\$ 3150
structural steel	\$ 16000
painting	\$ 4250
stair removal & misc site work	<u>\$ 3150</u>
	\$ 31400
add 10% to the total for security requirements, access limitations, remote location etc	\$ 3140
	<u>=====</u>
	\$ 34540

Total Cost = \$ 34,500

Say \$35K